



WORKING PAPER N° 2019 – 23

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JEL Codes:

Keywords :



PARIS-JOURDAN SCIENCES ÉCONOMIQUES

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www.pse.ens.fr

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE – ÉCOLE DES HAUTES ÉTUDES EN SCIENCES SOCIALES
ÉCOLE DES PONTS PARISTECH – ÉCOLE NORMALE SUPÉRIEURE
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Beyond the Exodus of May-June 1940: Internal Flows of Refugees in France during the Second World War

Florian Bonnet*

May 19, 2019

Abstract

The Exodus of May-June 1940 remains in the French memory a traumatic episode. However, the internal population flows due to the war did not stop in 1940. This paper analyzes these internal flows of refugees in France during the whole Second World War. To do so, I present a method for estimating intercensal local populations from three kinds of statistical data, namely intercensal national populations, local census populations, and intercensal local births and deaths. I use this method to estimate female populations in the French *départements* between 1939 and 1946, and finally calculate the yearly departmental migratory flows. I show that the Exodus of May-June 1940 was only a first step in the massive flows observed in France at that time. Between 1940 and 1941 a large part of the population was displaced from the North to the South of the country. In detail, *Ardennes* was the most affected by departures: in 1941, 60% of the population counted in 1939 were missing. I also show that the “*ligne de démarcation*” represented, until 1943, a spatial boundary between the *départements* which welcomed refugees and those in which the population left. This result proves that this fictitious border did not prevent people from moving. Finally, I show that France kept the scars of war in 1946: the North-West and the North-East did not see all of their refugees come back. At the opposite, the population of the South-West, a land of refugees during the war, increased between 1939 and 1946 because of these internal flows of refugees.

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1 Introduction

In April 1940, France was at war with Germany. Yet, little has changed in the life of the French during the “Phoney war”. Children continued to attend classes, while non-mobilized men and women worked in factories or fields. However, two months later, the German army paraded in Paris’ streets. The French army, which resisted for more than four years between 1914 and 1918, was defeated in a few weeks. Events followed quickly. First there was the invasion of Belgium and the Netherlands during the “18-day campaign”, which forced hundreds of thousands of Belgians and Dutch to flee to the South. Then the *Sedan*’s breakthrough occurred, while the General Staff of the Armies thought *Ardennes*’ crossing was impossible. There was finally the defeat during the Battle of France: the French and English soldiers, enclosed in the Dunkirk pocket, only owed their salvation to the mobilization of the United Kingdom’s fleet (“Dunkirk evacuation”). The advance of the German troops, inexorable during June 1940, led a large part of the population to the exodus from the North to the South of France. It has affected both the youngest and the oldest, women and non-mobilized men.

In this paper, I analyze internal flows of refugees on an annual basis during the Second World War. Indeed, if the Exodus of May-June 1940 remains in the collective mind a traumatic event, the population flows inside the country were also important during the rest of the war. They have not received the same attention yet: one needs both accurate data and a specific methodological protocol to estimate these population flows. As a result, there are two major contributions in this paper.

The first is methodological. I propose a method based on three kinds of data to estimate historical local populations for each year of an intercensal period: intercensal national populations, local census populations, and intercensal local births and deaths by cause. This method is based on the distinction between “asymmetrical mortality” – affecting only specific parts of the national territory – and “shared mortality”. By assuming that the relative rate of shared mortality (ratio between departmental and national rates) has evolved linearly during the intercensal period, I can distribute the national population among all the *départements*. As far as I know, it’s the first time a method seeks to estimate historical local populations on an annual basis¹: over the recent period, the study of internal migrations is mostly done by intercensal period. The method is based on a question asked to each individual who was surveyed about their place of residence in the previous census. Examples include Courgeau (1978), Baccaïni et al (1993), Baccaïni (1999) and Courgeau and Lelièvre (2004).² Nevertheless, none of these works estimated internal population flows on an annual basis.

This statement is the same according to the earlier period, but other statistical sources are mobilized. Kesztenbaum (2014) used military registers and explained how the residences of soldiers are known between age 20 to 46, which allows to track their movements. Houdaille (1971) as well as Farcy and Faure (2003) already used these registers to estimate inter-municipal and inter-departmental migrations. Family surveys are

¹ The methodological protocol used by the Human Mortality Database (Wilmoth et al., 2007) to calculate lifetables over a long period is an example. These lifetables require the populations on January 1st for each year. For each intercensal period, apparent migration flows are calculated in two stages. First, by computing the net flow between the two censuses: to do so, one has to compare the census population in the second census with the census population in the first census from which are subtracted the death of the cohort between the two censuses. Then one has to assume that the probability of migration is proportional to the elapsed time. This assumption is irrelevant during the Second World War. Indeed, the probability of migration was much greater between 1939 and 1940 than between 1937 and 1938 in the invaded *départements*.

² Using details in census data, population flows can also be disaggregated by sex or work category, as did Dean (1988). Other authors such as Pumain (1986) highlighted preferential flows of migration between French regions.

also an important source for tracking these migrations. The TRA survey (Bourdieu et al., 2014) followed generations of families whose last name begins with these three letters. This survey gave birth to many works: Rosental (2004) studied women's migrations in the 20th century; Daudain et al. (2018) reconstructed inter-departmental migration flows in order to better understand the spatial convergence of fertility rates in France at the end of the 19th century. Finally, collaborative genealogy data is an increasingly used source for tracking internal migrations. Brunet and Bideau (2000) already explained the advantages of these data twenty years ago. They are compiled by thousands of people who wish to know their family history. They make it possible to follow precisely the path of each one. Among other things, they give interesting data by territory, according to mortality and birth rates. Charpentier and Gaillic (2018) used them for example to estimate migration flows to Paris in the 20th century.

The second contribution of this paper is analytical. I use this new method to compute the annual populations of each *département* between 1939 and 1946, and track the internal flows of refugees over this period. Until now, works of historians according to this issue have been based on paper archives, photos, and administrative documents. They have focused mainly on the massive flows of the May-June 1940 Exodus. Because of its intensity in a very short period, it still marks the French collective memory today. Jackson (2003), Diamond (2008) and Alary (2013) retraced this flash exodus. They showed how the French government allocated a reception *département* in the South and the West to each Northern and Eastern *départements*. Thus, before the invasion of German troops, the population of *Alsace-Moselle* was evacuated and sent to these regions. They also reported how the flow of people fleeing to the South disrupted the arrival of French reinforcements during the *Ardennes'* breakthrough. They finally showed the scenes of generosity in the host *départements*, but also annoyance in front of these one-day-migrants that changed habits and put a risk on the available food reserves. The gradual return of refugees is also described: it was difficult to achieve because of the disorganization and destruction of railways. Jackson (2004) and Alary (2006) shed light to the everyday life of the French during the German occupation; they emphasized the difficult cohabitation with the enemy soldiers, especially the Italians in the South-East of the country. Alary (2006) also detailed the economic disorganization due to the demarcation line (which separated until 1943 the German-dominated North from the South): the production was disrupted as raw materials were on one hand and processing plants on the other.

Works of historians based on archival documents are important to trace the episode script; quantitative history is however also useful. For example, according to the recent period, Schmeidl (1997) analyzed the reasons for mass migration during conflicts. This is also the case in Salehyan and Gleditsch (2006)'s work: they showed how the population flows caused by wars can destabilize the host territories. One would think that this kind of work cannot be replicated for a conflict as old as the Second World War, because of the destruction of the raw statistics. Yet, public statistics functioned during the war: births were recorded in 86 of the 90 metropolitan *départements*, as were deaths by age group and by cause. These data did not disappear, and are freely available in official publications.

By computing these internal flows of refugees, I show that they were dramatic in the North-East, especially at the expense of *Ardennes* and *Meuse*. In *Ardennes*, more than 40% of the female population fled between 1939 and 1940, and more than 20% between 1940 and 1941. The return of these refugees to the North-East was particularly slow, mainly because of the creation of the North-East forbidden zone. Until December 1941,

the refugees could not return within this geographical area, so that the German populations could gradually colonize it. Moreover, I show how the refugee places changed during the war: they were first in the Center and the West in 1940, then in the South beyond the North-South demarcation line until 1943. At the end, refugees concentrated mainly in the rural central *départements*. In particular, these results show that the North-South demarcation line marked until 1943 a boundary between the *départements* whose population increased due to migratory flows, and the *départements* in which the population decreased. While the Germans wanted this new border to be hermetic, it did not stop these flows of people.

The rest of this paper is organized as follows. I present data and methods used to calculate internal migrations during the Second World War in Section 2. In Section 3 I present the results for each year according to migratory flows. The fourth section concludes.

2 Data and Methods

2.1 Departmental data

Two statistical sources are used at the departmental level. The first is Bonnet (2018)’s database, which focuses on departmental mortality in France during the 20th century and is based on the exhaustive collection of both vital statistics and census data by sex. I extract two types of information from this study. The first is the population recorded in 1936 and 1946 censuses, which surround the Second World War. These statistics are available for each sex and *département*. The second are vital statistics, namely the number of births and deaths yearly recorded between 1936 and 1946. They are available for each sex and each *département* except *Moselle*, *Bas-Rhin* and *Haut-Rhin* between 1939 and 1945, and *Corse* in 1942 and 1943. Note that I use these statistics as they were collected in the archives. Therefore, the methods used by Bonnet (2018) to calculate the departmental lifetables have no impact on the results presented in this study.

The second statistical source used is an exclusive one. In addition to the deaths recorded each year, official publications provide information about the cause of death for the 1936 and 1940–1946 years. Unfortunately, statistics for the 1937–1939 period were destroyed during the war. These deaths by cause are available for each *département*. They are also available by sex for the 1936 and 1942–1946 years. The International Classification of Diseases used at that time to distinguish causes of death remained the same throughout the period. The only exception is deaths due to car accidents, isolated in the 1944 classification. Appendix 5.1 produces this nomenclature.

Note that the departmental totals of deaths, whether classified by age in Bonnet (2018)’s database or by cause of death, coincide.

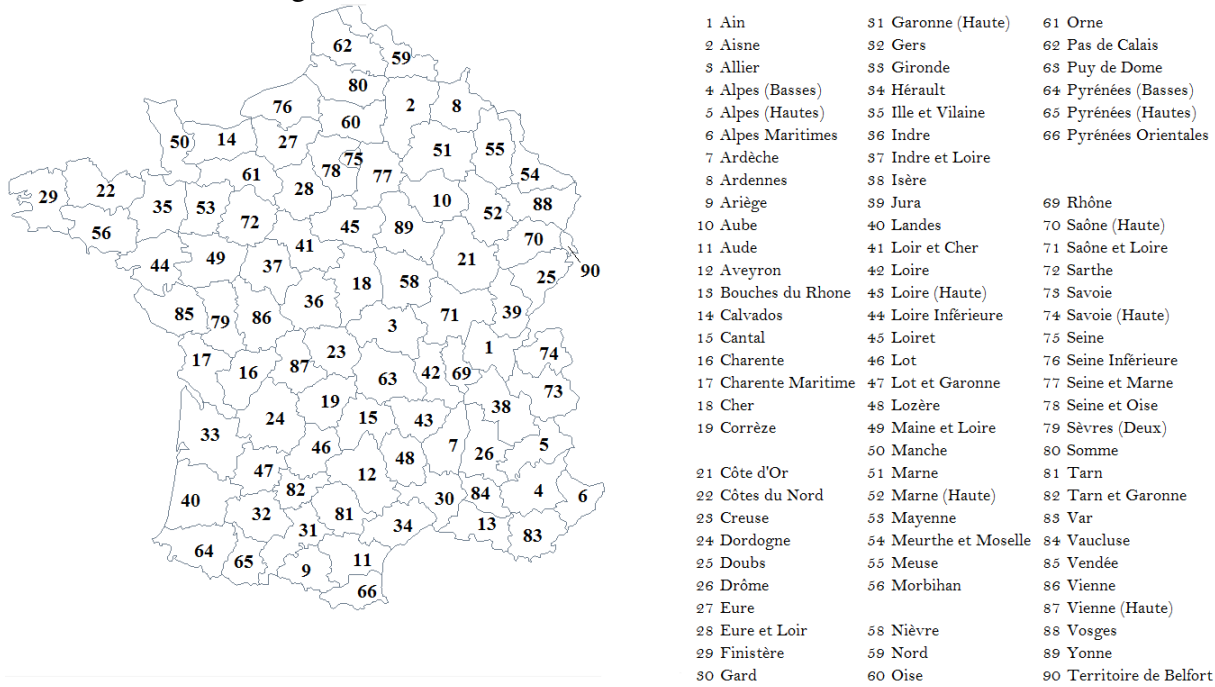
2.2 Framework of the Study

This study concerns the female population for two reasons. The first is military deaths: they are not included in the raw materials of the *Statistique Générale de la France* and the indirect sources used by Bonnet (2018) to compute these military deaths do not provide the home *département* of the deaths but the *département* of birth. Second, women’s migrations are in principle less constrained than those of men. French soldiers join

the battlefields of the North and East in 1940. At the end of the “*Campagne de France*”, 1,800,000 were made prisoners. Among them, 1,600,000 were sent to German camps, and 1,000,000 remained there for 5 years (Durand, 2015). For those remaining in France, 650,000 men were forced to go in Germany due to the “*Service du Travail Obligatoire*” (Spina, 2012). By computing the migrations of women, the reliability of this study should not be questioned.

The spatial framework does not cover the metropolitan territory as it is defined today. I excluded *Moselle*, *Bas-Rhin*, *Haut-Rhin* (these three *départements* are *Alsace-Lorraine*) and *Corse* because their data are unavailable between 1939 and 1945. Finally, my sample includes 86 *départements*, presented in Figure 1.

Figure 1: MAP OF THE 86 FRENCH DEPARTEMENTS



Notes: The numbers are those used in Bonnet (2018)’s database. Since data are missing in the vital statistics, *Corse* (20), *Moselle* (57), *Bas-Rhin* (67) and *Haut-Rhin* (68) are not included in this paper.

To estimate the total population of the 86 *départements* for each year between 1936 and 1946, I use Vallin and Meslé (2001)’s data. In their study of the French age-specific mortality during the 20th century, Vallin and Meslé (2001) estimated the national population on January 1st of each year using census and vital statistics data. However, their definition of national territory changes along the period: data do not include *Moselle*, *Bas-Rhin*, *Haut-Rhin* and *Corse* when the corresponding statistics are missing. Thereby, I have to ensure the consistency of data between departmental and national sources. Table 1 (Column 2) presents the national populations in Vallin and Meslé (2001)’s database. From 1936 to 1939 and in 1946, these data cover the metropolitan territory as we know it today. They do not include *Alsace-Lorraine* from 1939 to 1942, as well as *Corse* from 1943 to 1945. For the key years, data are available according to the old and the new definition of the national territory, which makes it possible to calculate the weight of the missing *départements* (Table 1, in italics). For example, before 1938, *Alsace-Lorraine* accounted for 4.60% of the total. Using this information, I estimate the population at January 1st for the 86 *départements* (Column 5). Subsequently, the term “national” will refer to this territory’s definition. Note that average populations of each year are calculated by averaging populations

of two successive years.

Table 1: ESTIMATES OF NATIONAL POPULATION OF WOMEN AT JANUARY 1st BETWEEN 1936 AND 1946

Year	Pop. January 1 st Vallin and Meslé (2001)	% Corse	% Alsace-Lorraine	Pop. January 1 st 86 départements
1936	21,390,450 ¹	0.60%	4.60%	20,277,826
1937	21,406,000 ¹	0.60%	4.60%	20,292,568
1938	21,422,700 ¹	0.60%	4.60%	20,308,399
1939	20,439,918 ²	0.60%		20,317,564
1940	20,520,230 ²	0.60%		20,397,395
1941	20,235,330 ²	0.60%		20,114,200
1942	20,165,130 ²	0.60%		20,044,420
1943	20,009,630 ³			20,009,630
1944	19,981,430 ³			19,981,430
1945	19,936,730 ³			19,936,730
1946	21,006,118 ³	0.60%	4.39%	19,957,902
1947	21 147,621 ¹	0.60%	4.39%	20,092,344

Notes: Population of women at January 1st calculated by Vallin and Meslé (2001) according to different definitions of the national territory. Italic numbers are the *départements* weights in the national population for the last known years. “86 départements” specification excludes *Moselle, Bas-Rhin, Haut-Rhin* and *Corse*.

1: Population of women with 90 *départements*; 2: Population of women without *Moselle, Bas-Rhin* and *Haut-Rhin*; 3: Population of women without *Moselle, Bas-Rhin, Haut-Rhin* and *Corse*

2.3 Estimation of Annual Departmental Populations and Internal Migrations

2.3.1 Methodological framework

To estimate annual internal migration flows during an intercensal period, one must know the annual populations of each *département*. Assuming that I know the yearly national populations, the goal is to allocate this population between each *département*. To do so, I start from the crude mortality rate $q_{i,t}$:

$$q_{i,t} = \frac{D_{i,t}}{P_{i,t}}, \quad (1)$$

with D the total of deaths, P the average population, t the year and i the *département*. In the same way, one can write 1 at the national level:

$$q_{nat,t} = \frac{D_{nat,t}}{P_{nat,t}}. \quad (2)$$

I assume that, at dates of the first and the second censuses (T_1 and T_2) of the intercensal period, the average population of the year is equal to the recorded population. Thereby both departmental and national mortality rates are available on these dates and I deduce the relative mortality rates θ :

$$\theta_{i,t} = \frac{q_{i,t}}{q_{nat,t}} = \frac{\frac{D_{i,t}}{P_{i,t}}}{\frac{D_{nat,t}}{P_{nat,t}}} \quad t = \{T_1, T_2\}. \quad (3)$$

Nevertheless, I cannot make a linear approximation of these values between T_1 and T_2 in order to deduce the departmental mortality rates and consequently the populations. I would assume that local mortality rates have evolved in the same way as death rates at the national level. Therefore, two types of mortality must be distinguished. The first, called "shared mortality", presents synchronized evolutions at the national and local level. The second, called "asymmetrical mortality", presents out of synchronization evolutions at national and local level. From this distinction, I rewrite (3) in (4). Let call q^* the mortality rates that do not account for asymmetric mortality. Thus, for T_1 and T_2 :

$$\theta_{i,t}^* = \frac{q_{i,t}^*}{q_{nat,t}^*} \quad t = \{T_1, T_2\}. \quad (4)$$

I assume that θ^* evolved linearly between T_1 and T_2 . In this way, I can estimate the relative mortality rates for each *département* and intercensal year, called $\hat{\theta}_{i,t}^*$. Using $\hat{\theta}_{i,t}^*$, I compute the average populations for each *département* and each year of the intercensal period ($\hat{P}_{i,t}$):

$$\hat{P}_{i,t} = \frac{D_{i,t}^*}{q_{nat,t}^* \times \hat{\theta}_{i,t}^*} \quad t = \{T_1, T_1 + 1, \dots, T_2\}. \quad (5)$$

Using yearly births B and deaths D , I get apparent migratory flows M :

$$\hat{M}_{i,t} = (\hat{P}_{i,t} - \hat{P}_{i,t-1}) - (D_{i,t} - B_{i,t}). \quad (6)$$

To conclude, one has to note that my method cannot disentangle the duration and the intensity of specific migrations since the population I use to estimate migration flows are average means. To illustrate this issue, let us take the example of a department where 100,000 people live during the year t . In $t + 1$, 50,000 leave this department during the first 3 months of the year, and then return. The average population in t is equal to 100,000, while the average population in $t + 1$ is 87,500. With my method, I estimate a migratory flow of 12,500 "women-years", or 12.5% of the population in t . This is the product of the migration duration (3 months, equal to 25% of the year) and the migration intensity (50,000, equal to 50% of the population in t).

2.3.2 Application to the Second World War

For this study, I calculate populations and internal migrations during the 1936–1946 intercensal period. The core element of the method I have proposed is to disentangle the "asymmetrical mortality from the "shared mortality" in order to keep only the latter. To do so, I use statistics by cause of death. An examination of the nomenclature used to classify the deaths allows to isolate the 42th category (43th after 1944) "Violent or accidental death (except suicide and homicide)" in which are the civilian deaths due to wars. This category includes deaths from bombing, whether from German or Allied forces.

Table 2 presents some global statistics concerning the share of deaths from accidental or violent deaths in the total. The weight of these deaths increased sharply during the war (Line 1), from 1.6% in 1936 to 3.5% in 1940 and 9.2% in 1944. This increase was not spatially the same: while the maximum was 2.9% in 1936, it reached a peak in 1944 with 41.6% in *Calvados* (Line 3). On the other hand, some regions remain isolated from

the war: the minimum is constant, around 1% of total deaths (Line 2). This is the case of the South-West rural *départements* such as *Ariège* and *Lozère*. The maximum in territorial differentiation is reached in 1944, with a standard deviation of 6.5 percentage points (Line 4). Some historical events are visible in these statistics: in 1943, the share of violent deaths is reached in *Loire-Inférieure* (12.2%). This is explained by the Allied bombing of September, which killed 1,450 people in *Nantes*.

Table 2: SHARE OF VIOLENT OR ACCIDENTAL DEATHS IN THE TOTAL FOR WOMEN: 1936–1946

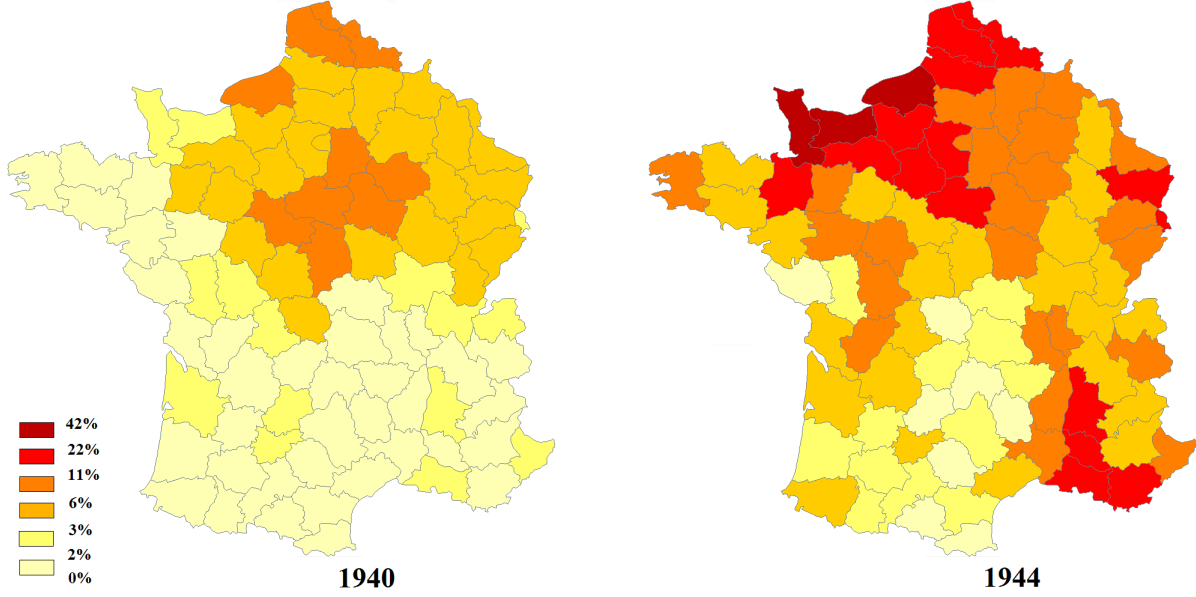
	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
National	1.6%				3.5%	2.3%	2.4%	3.5%	9.2%	2.6%	2.1%
Minimum	0.7%				0.8%	0.8%	0.9%	1.2%	0.7%	0.7%	0.6%
Maximum	2.9%				9.5%	4.5%	4.0%	12.2%	41.6%	8.0%	3.5%
Standard deviation	0.4				2.0	0.6	0.6	1.8	6.5	1.0	0.6

Notes: “National” refers to the 86 *départements* of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*). Violent or accidental deaths belong to the 42th (43th after 1944) category of the International Classification of Diseases in force at the time (See Appendix 5.1 for more details according to the nomenclature).

Figure 2 represents these shares of violent or accidental deaths for the 86 *départements* in 1940 and in 1944, when the national figures were maximum.³ These maps reveal why this mortality is called “asymmetrical mortality”. 1940 shows an excess mortality due to spatially concentrated warfare events: violent death were maximum in the North (*Nord*, *Pas-de-Calais*, *Seine-Inférieure*) and the South-East of the Paris region (between 6 and 11%). The first area is explained by the fighting during the “*Campagne de France*”, between May 10 and June 22, 1940. The second may be due to the Exodus of May-June 1940, which put on the roads population heavily exposed to raids of German aviation. The South and West were not affected: levels are similar to those of the pre-war period, between 0 and 2%. Indeed, German troops did not invade this area before the armistice. Values are much higher in 1944, with peaks reached in the northwestern and southeastern parts of the country. *Normandie*’s shores were particularly afflicted: the share rose up to 40% in *Calvados* while violent deaths represented about 25% of the total in *Seine-Inférieure* and *Manche*. In contrast, *Massif Central*, *Vendée* and the Pyrenean border kept values close to those observed in 1936.

³All the maps of this study have been realized with the Philcarto software <http://philcarto.free.fr/>

Figure 2: SHARE OF VIOLENT OR ACCIDENTAL DEATHS IN THE TOTAL FOR WOMEN: 1940 AND 1944



Notes: Violent or accidental deaths belong to the 42th (43th after 1944) category of the International Classification of Diseases in force at the time. Sample of 86 départements (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*).

I subtract violent or accidental deaths from total deaths to keep only the “shared mortality”. The missing death-by-cause statistics for the 1937, 1938 and 1939 years may seem problematic. This is not the case for two reasons. The first is that this study is centered on the 1939–1946 years: these missing data are therefore problematic only in 1939. The second is that it is very likely that the departmental weights of these accidental or violent deaths are similar in 1939 to those of 1936: very low (around 1%) and homogeneous throughout the national area. Indeed, the Second World War really began in Western Europe on May 10, 1940 with the invasion of Belgium and Luxembourg by German troops. The *Sedan*’s breakthrough came a few days later. In Equation (4), this means that the numerator and the denominator are multiplied by the same value, that is the percentage of non-violent and non-accidental deaths. This leaves θ^* unchanged. In 1940 and 1941, the distribution by sex is not available concerning causes of death. However, this distribution is quite stable (around 30% for women, for each year and each *département*); I used 1942 values to tackle this issue.

Finally, for each year between 1939 and 1946 and for each of the 86 *départements*, I get three variables concerning the female population: the total of deaths, the total of births and the average population.

3 Results

3.1 The Consequences of the War: Inter-departmental Migrations between 1939 and 1946

I first analyze the departmental variations of the female population between 1939 and 1946. I disentangle the apparent migratory movement from the intrinsic growth by using births and deaths collected by Bonnet (2018). Table 3 presents the national population variations between 1939 and 1946 (in %) as well as a summary of the distribution of the departmental variations. Appendix 5.2 presents the estimated values for each of the 86

départements of the sample.

Table 3 shows that the population decreased by 1.6% over the period at the national level (Column 1). This decrease was equally distributed between the intrinsic growth (0.7 point, Column 2), and the migratory movement (0.9 point, Column 3).

Table 3 also reveals that these national variations are far much lower than the departmental variations: the latter fall between +13.7% and -19.2% (a decrease 12 times greater than the one observed at national level). The distribution between the two components of these local variations shows that the intrinsic growth had only a small influence. At most, the population increased by 2.8% due to the surplus of births compared to deaths (*Pas-de-Calais*). Thus, migrations had the largest contribution: the rates of change ranged from -18.2% to +14.9%, with a standard deviation of 6.5 percentage points. One can conclude that the departmental populations evolved in a so differentiated manner because of internal population migrations.

Table 3: VARIATIONS OF FEMALE POPULATIONS BY COMPONENT BETWEEN 1939 AND 1946: DESCRIPTIVE STATISTICS

		Total	Intrinsic growth	Migratory movement
Departmental distribution of population variations	Minimum	-19.2%	-4.6%	-18.2%
	Maximum	13.7%	2.8%	14.9%
	Median	-2.3%	-0.7%	-1.4%
	Standard deviation	6.4	1.5	6.5
National		-1.6%	-0.7%	-0.9%

Notes: “National” refers to the 86 départements of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*). Population variations between the average population in 1939 and the recorded population in 1946. Intrinsic Growth is the difference between births and deaths. Migratory movement is the difference between the whole variation and the intrinsic growth.

3.2 Annual Monitoring of Internal Population Migrations

Figures 3 to 6 map the variation of population due to migratory flows between one year and 1939 (in % of the July 1st, 1939 population). They represent the cumulative of net migrations since the beginning of the war. Appendix 5.3 provides annual flows for each of the 86 départements.

1940: the flight to the South-West Figure 3 shows the well-known results according to the May-June 1940 Exodus. However, they cannot be directly compared to the figures of the displaced during these two months, since the method used does not estimate the infra-annual flows. This map shows how the population next to the eastern borders (Belgium, Luxembourg, Germany, Switzerland and Italy) as well as the ones living in *Seine* and *Seine-et-Oise* (corresponding to the Paris agglomeration) fled in the Center and the South-West of the country between 1939 and 1940. *Ardennes* lost 42% of its female population, *Meurthe-et-Moselle* 16%, *Hautes-Alpes* 17%. In a few days, when the capital was declared as “open city”, a large part of the population left Paris and its suburbs. Nevertheless, the return flow was rapid: over the period, only 8% of the population is missing due to migrations.

From *Marne* to *Pyrénées-Atlantiques* via *Corrèze*, all the South-West départements welcomed refugees. The départements in the south of Paris welcomed the most of them. The population of *Loiret*, *Yonne* and *Aube*

increased by about 16% due to these internal migrations. Also, one has to note the increase of 16% recorded in *Allier*, where the government settled after the Franco-German armistice of June 22, 1940. The situation in *Pyrénées-Orientales* is different: the female population decreased by 17% between 1939 and 1940. This is explained by the flow of Spanish Republicans who fled Franco's victory, estimated around 500,000 for both sexes (Dreyfus, 2012). These refugees, concentrated on the Spanish border in 1939, transiently increased the population at that time. It then decreased due to their redistribution in the other *départements* of the South-West.

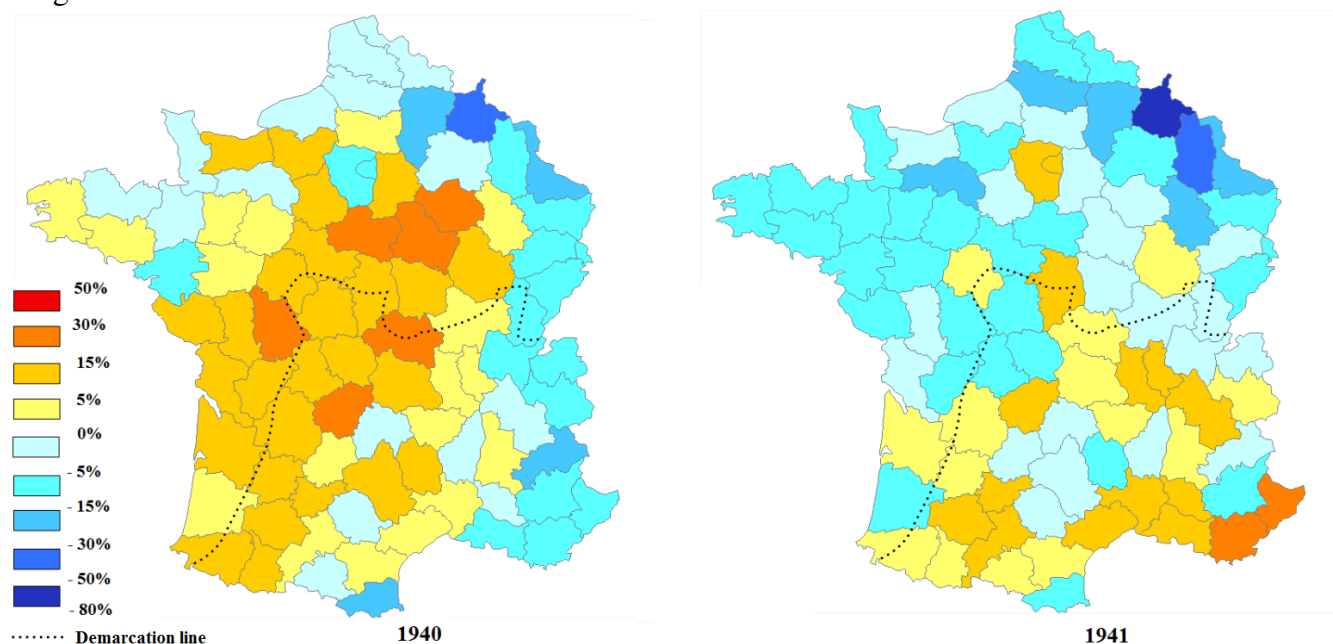
At the national level, 650,000 women left the *départements* of North and East to flee in the Center and the South-West between 1939 and 1940. In addition, 60,000 women left to take refuge abroad.

1941: no return for the northeastern refugees The most striking statement of Figure 3 in 1941 is the dark blue spot in the North-East, and more particularly in *Ardennes* and *Meuse*. In 1941, 60% of the population was away from *Ardennes* because of migrations, 35% in *Meuse*. More broadly, 15 to 30% of the northeastern population left between 1939 and 1941. Thus, despite the Franco-German armistice, the flow of refugees did not seem to dry up. The explanation comes from the different restricted areas within the part of country controlled by the German. Beyond *Moselle*, *Bas-Rhin* and *Haut-Rhin* annexed by Germany, refugees cannot return to a wide area including *Doubs*, *Haute-Saône*, *Vosges*, *Meurthe-et-Moselle*, *Meuse*, *Ardennes* and the northern part of *Aisne* and *Somme*. Moreover, the German military command governed the population of *Pas-de-Calais* and *Nord*. In addition, one can see that the population of the West fled towards the free zone too: it is the case of *Bretagne*, *Normandie*, *Pays de la Loire* as well as a large part of the Center region, which hosted refugees from the May-June 1940 Exodus. 15% of their 1939 population left *Mayenne*, *Indre*, *Loir-et-Cher* or *Vendée*.

Two new refugee areas appeared in 1941: the Paris region and the South-East. For the first, the May-June 1940 Exodus was already far away. The population of *Seine* and *Seine-et-Oise* increased between 1940 and 1941 by 23% and 13%, respectively (in % of their population in 1939). *Île-de-France* thus was used as a refuge for the national population, even if difficulties in transportation probably made it a forced refugee area. Refugee flows were important in the South-East, especially near the Mediterranean coast. Between 1940 and 1941, *Var* and *Alpes-Maritimes* welcomed 50,000 and 70,000 women, respectively. It is about 25% of their 1939 population.

The May-June 1940 Exodus is remembered as massive and risky because of military operations. Nevertheless, the 1940–1941 period concentrates the largest permanent population flows. Movements towards the capital and the South-East of the country put nearly 1,150,000 women on the roads, while another 100,000 went abroad. The whole represented about 7% of the total population.

Figure 3: POPULATION VARIATIONS SINCE 1939 DUE TO MIGRATORY MOVEMENT: 1940 & 1941



Notes: Computations made for the 86 départements of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*), according to the population of women. Population variations between the average population in 1939 and the average population in 1940 and 1941. Migratory movement is the difference between the whole variation and the intrinsic growth. Intrinsic growth is the difference between births and deaths.

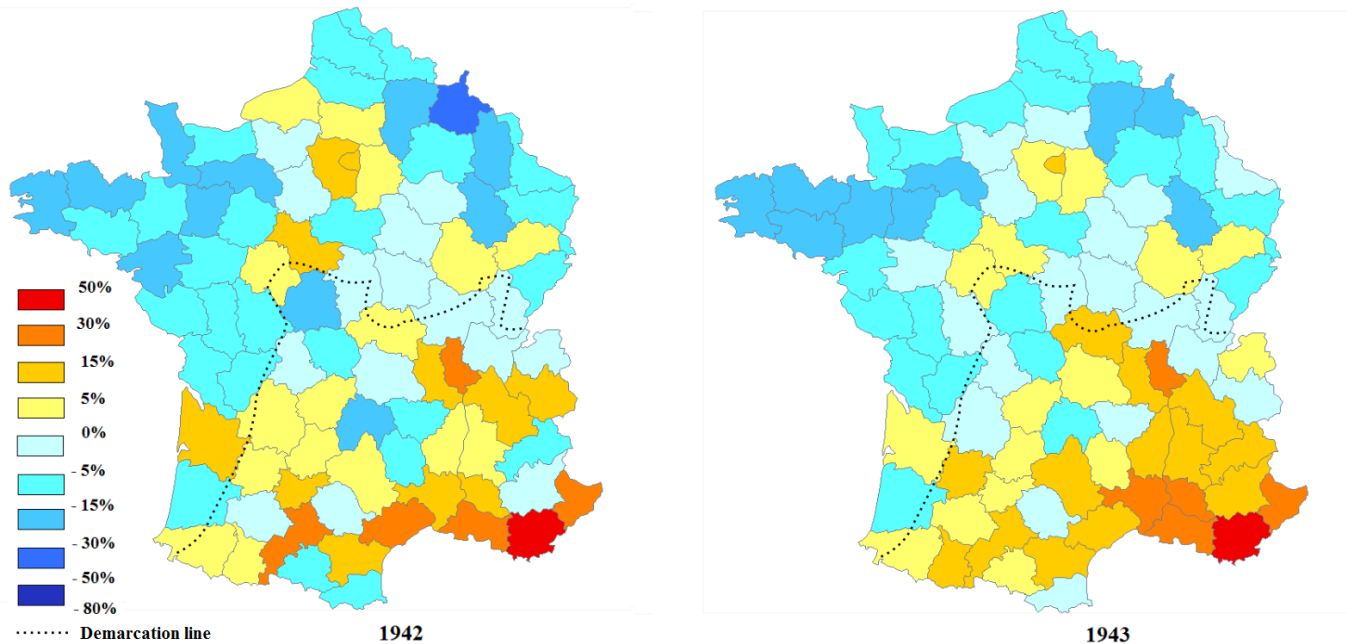
1942 and 1943: return of the northeastern refugees and departure towards the South Figure 4 reveals population variations between 1939 and 1942 and between 1939 and 1943. Overall, migrations were three times smaller in 1941-1942 and 1942-1943 than those observed between 1940 and 1941. The net migration flow of women leaving their départements is around 450,000. The outward flow of the country dried up, since only 10,000 left the country. During this period, the populations living near the borders of the North-East came back, particularly in *Meuse* or *Ardennes*. The northeastern line that prohibited the return of refugees was gradually easing. Between 1941 and 1943, more than 60% of women who left these two départements came back to live there. The situation was similar for *Meurthe-et-Moselle*.

Concerning the rest of the country, Figure 4 reveals several interesting features. The first concerns the Paris region. The refugee flows reversed in *Seine* and *Seine-et-Oise*: 150,000 women left the region between 1941 and 1943. It is difficult to know precisely where they went. Nevertheless, it seems reasonable to assume that these women were both refugees from the North-East returning home, and residents of the capital who also fled gradually beyond the demarcation line. The second concerns the North-West of the country, whose population continued to flee between 1941 and 1942: 8 to 10% of the 1939 population went to live elsewhere in *Calvados*, *Côtes-du-Nord*, *Finistère*, *Manche* or *Loire-Inférieure*. At this date, nearly 20% of the 1939 population is missing in these départements due to internal migrations. The Atlantic Wall which appeared in April 1941 may be one of the explanations. This area, 20 to 30 kilometers wide, from Dunkirk to *Pays Basque*, was prohibited to anyone without specific authorization.

The North-South gradient for population losses due to migrations was the most pronounced in 1943. The demarcation line, which disappeared since November 1942, left a strong imprint on the geography of migrations since the beginning of the war. From *Basses-Pyrénées* to *Jura* through *Charentes* and *Nièvre*, only a few

départements north of this line present a gain in population due to migrations since 1939. This is the case of the Paris region, even if the flow was reversed since 1941. This is also the case of *Côte-d'Or* and *Haute-Saône*, which probably still hosted some refugees of the eastern frontiers who did not return to their homes. Concerning *Gironde*, although the stock of migrations since 1939 was still positive, the flow was strongly negative: between 1942 and 1943, 13% of the 1939 population emigrates, namely more than 60,000 women. For the remaining *départements*, a large South-East quarter welcomed refugees, with peaks reached in *Rhône* and along the Mediterranean coast. As such, 31% of its 1939 population settled in *Var*, 25% in *Alpes-Maritimes* and 22% in *Gard*.

Figure 4: POPULATION VARIATIONS SINCE 1939 DUE TO MIGRATORY MOVEMENT: 1942 & 1943



Notes: Computations made for the 86 *départements* of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*), according to the population of women. Population variations between the average population in 1939 and the average population in 1942 and 1943. Migratory movement is the difference between the whole variation and the intrinsic growth. Intrinsic growth is the difference between births and deaths.

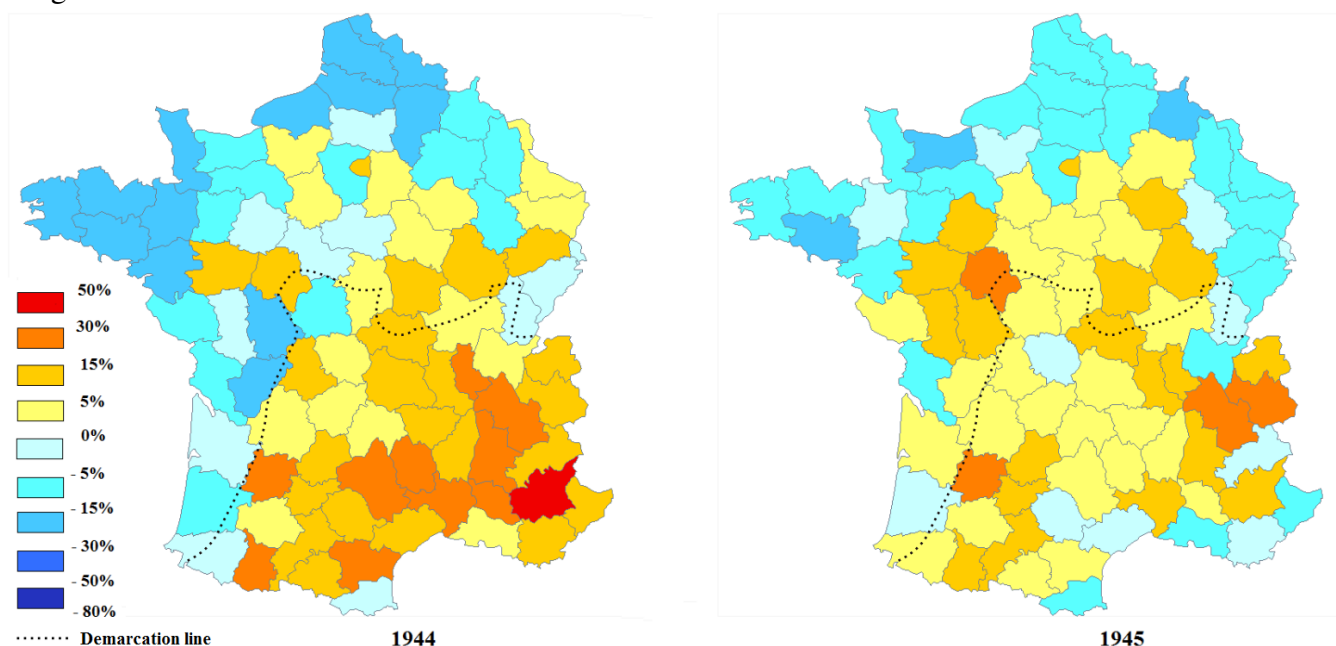
1944: the inland flight The 1944 map (Figure 5) reveals a break from previous years, for several reasons. First, the demarcation line was not as marked as in 1943: the South-East still hosted a large number of refugees, but these refugees were progressively moving North. *Nièvre*, *Côte d'Or*, *Maine-et-Loire* and *Indre-et-Loire* turn positive on the map. At the same time, the North of the country as well as *Bretagne* homogenize, joined by all the *départements* in the south of Atlantic coast. Finally, refugees on the Mediterranean coast were starting to leave. Emigration from *Alpes-Maritimes*, *Var* and *Bouches-du-Rhône* represented more than 180,000 women, probably towards inland. As such, *Basses-Alpes* received between 1943 and 1944 the equivalent of 25% of its 1939 population. These values were about 15% for the nearby *départements* such as *Drôme*, *Lozère*, *Aveyron*, *Cantal* or *Haute-Loire*. *Cantal* and *Haute-Loire* are particularly interesting insofar as they stayed away from the refugee wave although they were located beyond the demarcation line. These rural *départements* thus served as a refuge during this period. In aggregate terms, migration flows were picking up again: between 1943 and 1944, 575,000 women migrated to another department, and 25,000 to other countries.

These movements are probably explained by two reasons. The first is the occupation of the free zone by the Germans and Italians since November 1942 and by the Germans only since September 1943. The South-East was no longer a protected area for refugees. This is even more the case of the well urbanized Mediterranean coast, which saw the massive arrival of German troops. The second concerns the preparations for landings, whether on *Normandie's* beaches (June 1944) or in *Provence* (August 1944). The populations surely fled the allied bombings that preceded them, in *Nantes* (September 1943, 1,450 victims), but also in *Marseille* (May 1944, 1,750 victims). In their flight, the populations of the South-East coastal *départements* took refuge in the nearest rural *départements*, with no military targets.

1945: the gradual return of refugees settled in the South Figure 5 shows much less diverse situations in 1945 than in 1944. Refugees gradually left areas which hosted the most of them during the Second World War and return to their home *départements*. Between 1944 and 1945, nearly 700,000 women participated in these reverse migrations, from South to North, making it the second highest total after 1940-1941.

In detail, a large part of the population of the Atlantic coast, *Bretagne* and the North of the country came back: *Loire-Inférieure* and *Ile-et-Vilaine* each welcomed 60,000 women between 1944 and 1945. This is almost all the missing due to migrations in *Ile-et-Vilaine*. This finding is similar in *Somme*, *Nord* and *Pas-de-Calais*, where incoming migratory flows were about 20,000 to 30,000 women. At the opposite, the South-East rural *départements* see their refugees went back to their home *départements*. Globally, it was the equivalent of 5 to 20% of their 1939 population which left *départements* close to the *Massif Central*. Values reached 9% in *Ardèche*, 13% in *Aveyron*, 18% in *Lozère*. Note that departures were also important along the Mediterranean coast. Beyond the return of refugees to their homes, the migratory movement between 1939 and 1945 had a negative contribution to the female population variation in *Var*, *Bouches-du-Rhône* and *Alpes-Maritimes*.

Figure 5: POPULATION VARIATIONS SINCE 1939 DUE TO MIGRATORY MOVEMENT: 1944 & 1945



Notes: Computations made for the 86 *départements* of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*), according to the population of women. Population variations between the average population in 1939 and the average population in 1944 and 1945. Migratory movement is the difference between the whole variation and the intrinsic growth. Intrinsic growth is the difference between births and deaths.

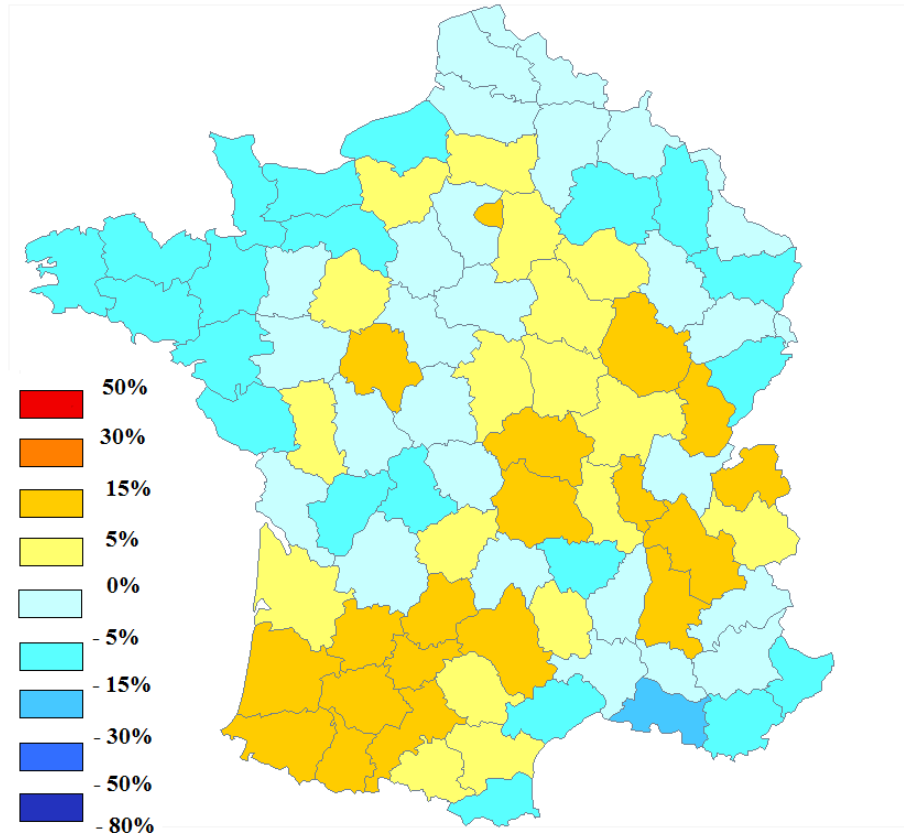
1946: the scars left by World War II Figure 6 shows the final situation in 1946. This date is important for two reasons. First, it is a census year: the population of 1946 is no longer estimated but recorded. Second, it is a year of gradual stabilization in France: even if the country was hurt by the fighting for the *Libération*, no more military operations were taking place on the metropolitan land: the Allied and German bombings stopped.

This map reveals a first global statement: the absence of bright colors (population difference between 1939 and 1946 due to the net migration more than $\pm 15\%$) shows that almost all the refugees returned, which was not true in 1944 and 1945 yet. In detail, the last major migratory flows left from the South-East and the Center-West. *Départements* such as *Isère*, *Basses-Alpes*, *Haute-Loire* or *Indre-et-Loire*, *Vienne* and *Haute-Vienne* saw the return of 10% of their 1939 population between 1945 and 1946. These migratory flows were mainly directed towards three partially depopulated areas: the North of the country – with values of 9% and 11% for *Nord* and *Pas-de-Calais* – *Normandie* which had been strongly affected by the landing – values close to 7% for *Calvados*, *Manche* and *Eure* – as well as the North-East – values of 11% for *Ardennes* or 7% for *Aisne*. The flows towards *Nord*, *Pas-de-Calais*, *Ardennes* and *Aisne* were about 200,000 women, that is 40% of the total flow over the period. Note that the net flow to foreign destinations was finally reversed, with the return of 40,000 women in France.

This map refines the analysis of the scars started in section 3.1. Even if a large part of the metropolitan territory recovered the population lost due to internal migrations, some areas reveal the war demographic stigma. This is the case of the North-East, which lost between 1939 and 1946 about 7% of its population due to internal migrations, with values above 10% in *Meuse* and *Vosges*. The situation is similar in *Normandie*

and *Bretagne* where migrations caused the displacement of 8% of the population. The maximum values picked up in *Loire-Inferieure* (-14%), *Morbihan* (-13%) and *Seine-Inférieure* (-10%). Conversely, the South-West and some *départements* in the Central-East welcomed a population that never left. A particularly homogeneous area appears between *Aveyron*, *Landes* and *Hautes-Pyrénées*: over the period, the values are about 8%, with a maximum reached in *Lot-et-Garonne* (15%).

Figure 6: POPULATION VARIATIONS SINCE 1939 DUE TO MIGRATORY MOVEMENT: 1946



Notes: Computations made for the 86 *départements* of the sample (excluding *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin*), according to the population of women. Population variations between the average population in 1939 and the recorded population in 1946. Migratory movement is the difference between the whole variation and the intrinsic growth. Intrinsic growth is the difference between births and deaths.

4 Conclusion

In this paper, I have first proposed a methodology to estimate local populations in an intercensal period. This methodology is based on the knowledge of the national population for each intercensal year, local populations for each census year and local vital statistics for each intercensal year. By using these vital statistics, I can distinguish the “shared mortality”, which evolves in a synchronized manner at the local and national levels, from “asymmetrical mortality”. To do so, the availability of deaths by cause is crucial.

With this methodology I have estimated the female populations of each *département* (outside *Corse*, *Moselle*, *Bas-Rhin* and *Haut-Rhin* for which the data are missing) and each year between 1939 and 1946. I have considered that the violent or accidental deaths had to be subtracted from the total deaths in order to get the “shared mortality”. Using both estimated populations and total flows of departmental births and deaths, I have calcu-

lated the annual internal migration flows during the Second World War, which had never been done before. These computations are all the more interesting as the differences in population variations between 1939 and 1946 are significant (between -20% and + 20% depending on the *département*) and cannot be explained by the differences in intrinsic growth (between -5% and +2%).

The annual monitoring of migratory flows has first revealed the extent of the May-June 1940 Exodus in France. Populations near the eastern borders, then in a further South as the German army advanced, fled to the South-West. 40% of *Ardenne*s' population left between 1939 and 1940, as well as 10% of the Alpine *départements* one. In the northeastern *départements*, the population took a long time to come back, since the "northeastern line" prevented the return of refugees. This return was done later, with the easing of controls along this line. From 1941, the largest population movements moved from the North and North-West to the South, beyond the new demarcation line established by the German. While in the conventional wisdom this fictional border has been experienced as a tear, it is interesting to note that in fact the populations were able to cross it massively. In 1942 and 1943, the Mediterranean coastal *départements* hosted the equivalent of 20% of their 1939 populations, with maximum values reached in *Var* and *Alpes-Maritimes* at around 30%. From 1944, the refugee populations moved inland, fleeing the coasts by which the "*Libération*" arrived. Refugees in the Mediterranean area spread to neighboring rural *départements* such as *Lozère* or *Aveyron*. As such, *Basses-Alpes* was a haven for the South-East inhabitants afflicted by bombings. The situation gradually normalized between 1945 and 1946: it was "the backward Exodus". The southern *départements* that received the most of refugees saw them gradually moving back to the North and the North-West. At the end of the war, the French spatial demography still bore the scars of war: the refugees from *départements* north of an arc connecting *Loire-Inférieure* and *Doubs* via *Somme* did not all come back. The demographic weight of these missing women was between 5 and 15% of the 1939 population, with maximum values reached in *Meuse* or *Bretagne*.

This study, particularly innovative since it has used the quantitative information available through censuses and vital statistics, may open the way for further works on this historical event. In the first place, the study of males displaced would be challenging but quite interesting : one could quantify the gradual return of prisoners from Germany, the reverse flow of individuals belonging to the *Service du Travail Obligatoire* and maybe the migrations due to the *résistance*. Indeed, some *départements* were at the forefront of resistance: for example *Drôme* and *Isère* with the *Vercors*, but more generally the whole Alps and the *Cévennes*. This work would require both military deaths and deaths in deportation for each *département* and each year. The study of migratory movements according to age is also promising: it is likely that the elderly were less involved in these internal migrations because of their weakness, but no study has been able to quantify this phenomenon. Finally, other historical events during which migrations were intense could be studied, in France or elsewhere. As such, the *Pieds-Noirs* Exodus coming from Algeria in the 1960s is an emblematic one. The settlement's geography of these populations could be refined by using the method developed here, and would shed new light on this event, in line with Hunt (1992).

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5 Appendices

5.1 Cause of Death Classification

Nomenclature	
1 to 14	Infectious and Parasitic Diseases
15	Cancer and other Malignant Neoplasms
16	Non-malignant neoplasms
17 to 20	General Diseases and Chronic Poisoning
21 to 23	Diseases of the Nervous System
24 and 25	Diseases of the Circulatory System
26 to 28	Diseases of the Respiratory System, without tuberculosis
29 to 34	Diseases of the Genetourinary System
35 to 36	Pregnancy, Childbirth and Puerperium
37	Skin, Cellular Tissue, Bones and Organs of Locomotion Diseases
38	Débilité congénitale, vices de la conformation congénitaux, prématurés
39	Senility
40	Intentional Self-harm (<i>Suicide</i>)
41	Assault (<i>Homicide</i>)
42	Violent or Accidental Deaths (without Intentional Self-harm and Assault)
43	Causes non spécifiées ou mal définies

The nomenclature used to classify deaths according to their cause had 43 categories between 1936 and 1943. From 1944, the nomenclature added a 44th category to take into account the deaths of car accidents. In this study, I have isolated deaths in the 42th category (43th after 1943), which correspond to what I call "asymmetrical mortality". They are mainly deaths due to bombings on the national territory, whose share in total deaths is 2.5 times higher in 1940 (6 times higher in 1944) compared to the pre-war level (1936).

5.2 Evolutions of Departmental Populations by Component between 1939 and 1946

	Total	Intrinsic growth	Migratory movement		Total	Intrinsic growth	Migratory movement
Ain	-2.5%	-0.4%	-2.1%	Loiret	-4.1%	-1.3%	-2.8%
Aisne	-4.2%	0.8%	-4.9%	Lot	1.1%	-4.6%	5.7%
Allier	7.6%	-2.0%	9.6%	Lot et Garonne	13.7%	-1.2%	14.9%
Alpes (Basses)	-6.1%	-1.7%	-4.4%	Lozere	1.0%	-0.1%	1.0%
Alpes (Hautes)	-0.1%	1.5%	-1.7%	Maine et Loire	-3.6%	-0.4%	-3.2%
Alpes Maritimes	-11.8%	-2.3%	-9.5%	Manche	-7.1%	0.5%	-7.6%
Ardeche	-3.4%	-2.0%	-1.4%	Marne	-4.2%	1.0%	-5.1%
Ardennes	-3.0%	1.3%	-4.3%	Marne (Haute)	-3.5%	0.1%	-3.6%
Ariege	-3.7%	-3.7%	0.0%	Mayenne	-4.3%	0.4%	-4.6%
Aube	2.2%	-0.4%	2.6%	Meurthe et Moselle	-2.8%	1.0%	-3.8%
Aude	-2.6%	-2.7%	0.1%	Meuse	-8.7%	0.2%	-9.0%
Aveyron	3.9%	-1.1%	5.1%	Morbihan	-12.5%	0.4%	-12.9%
Bouches du Rhone	-19.2%	-0.9%	-18.2%	Nievre	-2.9%	-3.6%	0.7%
Calvados	-8.9%	0.2%	-9.1%	Nord	-2.3%	0.0%	-2.3%
Cantal	-2.2%	0.2%	-2.3%	Oise	-0.3%	-0.5%	0.1%
Charente	-8.7%	-1.2%	-7.5%	Orne	-10.3%	-0.7%	-9.6%
Charente Maritime	-1.9%	-0.5%	-1.4%	Pas de Calais	1.1%	2.8%	-1.7%
Cher	-0.8%	-2.8%	2.0%	Puy de Dome	3.8%	-2.6%	6.4%
Correze	3.0%	-1.5%	4.5%	Pyrenees (Basses)	4.6%	-1.2%	5.9%
Cote d'Or	9.2%	-0.7%	9.9%	Pyrenees (Hautes)	10.8%	-2.2%	13.1%
Cotes du Nord	-6.0%	0.1%	-6.1%	Pyrenees Orientales	-13.6%	-1.7%	-11.9%
Creuse	-4.9%	-4.2%	-0.7%	Rhone	4.9%	-0.7%	5.6%
Dordogne	-3.0%	-1.5%	-1.5%	Saone (Haute)	-6.2%	-1.4%	-4.7%
Doubs	-3.2%	2.6%	-5.8%	Saone et Loire	0.7%	-1.3%	2.1%
Drome	6.6%	-1.2%	7.8%	Sarthe	1.5%	1.1%	0.4%
Eure	1.7%	0.4%	1.3%	Savoie	3.2%	0.9%	2.3%
Eure et Loir	-0.7%	-0.5%	-0.2%	Savoie (Haute)	12.6%	2.5%	10.1%
Finistere	-3.9%	1.1%	-5.0%	Seine	8.1%	-1.3%	9.4%
Gard	-2.9%	-1.9%	-1.0%	Seine Inferieure	-9.8%	0.4%	-10.2%
Garonne (Haute)	10.1%	-2.0%	12.1%	Seine et Marne	1.6%	-1.7%	3.3%
Gers	7.3%	-2.7%	10.1%	Seine et Oise	-5.2%	-2.5%	-2.7%
Gironde	-0.8%	-2.6%	1.7%	Sevres (Deux)	4.3%	1.1%	3.2%
Herault	-7.6%	-2.1%	-5.5%	Somme	-4.2%	0.0%	-4.2%
Ille et Vilaine	-6.4%	0.1%	-6.5%	Tarn	-1.1%	-1.6%	0.5%
Indre	-2.5%	0.2%	-2.7%	Tarn et Garonne	6.3%	-1.9%	8.2%
Indre et Loire	7.1%	-0.2%	7.2%	Var	-8.8%	-1.4%	-7.4%
Isere	5.3%	-0.6%	5.9%	Vaucluse	-2.8%	-1.3%	-1.5%
Jura	7.6%	0.6%	7.1%	Vendee	-7.1%	0.7%	-7.8%
Landes	3.1%	-2.0%	5.1%	Vienne	-0.2%	0.3%	-0.4%
Loir et Cher	-2.0%	-1.0%	-0.9%	Vienne (Haute)	-10.8%	-1.8%	-9.0%
Loire	2.8%	-0.5%	3.3%	Vosges	-11.1%	-0.9%	-10.2%
Loire (Haute)	-10.5%	-3.2%	-7.3%	Yonne	-0.9%	-4.2%	3.3%
Loire Inferieure	-14.0%	-0.3%	-13.7%	Belfort	-0.7%	0.8%	-1.5%

5.3 Yearly Variations of Population due to Migratory Movement (in % of the Average Population in 1939)

	1939–1940	1940–1941	1941–1942	1942–1943	1943–1944	1944–1945	1945–1946
Ain	-7%	5%	-2%	1%	4%	-7%	3%
Aisne	-15%	-12%	9%	1%	2%	3%	7%
Allier	16%	-11%	-1%	2%	8%	-3%	-1%
Alpes (Basses)	-10%	4%	1%	13%	25%	-26%	-12%
Alpes (Hautes)	-16%	13%	-12%	24%	3%	-17%	3%
Alpes Maritimes	-8%	25%	1%	7%	-15%	-17%	-1%
Ardeche	-3%	-1%	6%	3%	5%	-9%	-3%
Ardennes	-42%	-21%	20%	26%	5%	-4%	11%
Ariege	-1%	2%	-8%	8%	10%	-8%	-3%
Aube	18%	-18%	-2%	-2%	7%	4%	-4%
Aude	2%	1%	4%	4%	6%	-14%	-4%
Aveyron	14%	-15%	2%	4%	11%	-13%	2%
Bouches du Rhone	-8%	22%	4%	-3%	-14%	-15%	-5%
Calvados	7%	-10%	-8%	-2%	6%	-8%	7%
Cantal	0%	-3%	-12%	6%	12%	-3%	-3%
Charente	8%	-20%	-2%	4%	-9%	19%	-8%
Charente Maritime	8%	-12%	-10%	5%	-1%	1%	6%
Cher	13%	-6%	-7%	-3%	6%	2%	-3%
Correze	16%	-7%	-7%	0%	2%	1%	0%
Cote d'Or	6%	-5%	-1%	4%	10%	-4%	0%
Cotes du Nord	-2%	-9%	-6%	0%	0%	11%	0%
Creuse	8%	-13%	-2%	1%	10%	-5%	1%
Dordogne	10%	-9%	2%	-5%	5%	-3%	-2%
Doubs	-13%	0%	4%	2%	3%	-6%	4%
Drome	2%	-1%	1%	5%	13%	-7%	-5%
Eure	6%	-13%	7%	-3%	6%	-6%	5%
Eure et Loir	9%	-13%	0%	3%	2%	0%	-2%
Finistere	0%	-10%	-7%	-1%	1%	4%	7%
Gard	2%	6%	2%	11%	-2%	-13%	-8%
Garonne (Haute)	1%	12%	2%	-2%	-5%	-1%	4%
Gers	8%	-3%	-8%	6%	1%	1%	5%
Gironde	8%	-5%	11%	-13%	-5%	6%	0%
Herault	5%	8%	6%	-7%	2%	-17%	-1%
Ille et Vilaine	-2%	-8%	-4%	-2%	-4%	18%	-5%
Indre	6%	-12%	-12%	5%	2%	12%	-5%
Indre et Loire	10%	-6%	-2%	2%	7%	9%	-13%
Isere	-4%	9%	10%	-1%	6%	-3%	-11%
Jura	-5%	4%	1%	-1%	-2%	0%	10%
Landes	2%	-9%	-4%	3%	-2%	11%	5%
Loir et Cher	8%	-14%	13%	-4%	-9%	6%	-3%
Loire	0%	6%	3%	4%	1%	-5%	-6%

	1939–1940	1940–1941	1941–1942	1942–1943	1943–1944	1944–1945	1945–1946
Loire (Haute)	4%	-2%	-8%	7%	8%	-4%	-11%
Loire Inferieure	-8%	-2%	-8%	3%	-11%	15%	-3%
Loiret	16%	-23%	0%	1%	6%	2%	-3%
Lot	2%	-5%	3%	3%	11%	-5%	-3%
Lot et Garonne	14%	-9%	-2%	11%	7%	-5%	-1%
Lozere	10%	-21%	2%	10%	18%	-18%	1%
Maine et Loire	2%	-8%	0%	4%	7%	9%	-17%
Manche	-1%	-9%	-8%	4%	-3%	4%	7%
Marne	-1%	-12%	-1%	3%	3%	8%	-6%
Marne (Haute)	4%	-23%	-1%	3%	11%	2%	0%
Mayenne	5%	-15%	-9%	-1%	8%	4%	4%
Meurthe et Moselle	-16%	1%	5%	7%	3%	-7%	3%
Meuse	-10%	-25%	7%	14%	-1%	3%	3%
Morbihan	1%	-7%	-6%	-8%	-7%	9%	4%
Nievre	11%	-15%	1%	1%	12%	-2%	-7%
Nord	-3%	-7%	-3%	2%	-5%	4%	9%
Oise	2%	-3%	5%	-7%	1%	-4%	6%
Orne	-3%	-14%	-2%	0%	12%	-2%	0%
Pas de Calais	-1%	-12%	-1%	3%	-8%	6%	11%
Puy de Dome	12%	-8%	-5%	3%	4%	-4%	4%
Pyrenees (Basses)	12%	-7%	-2%	-2%	-3%	5%	4%
Pyrenees (Hautes)	9%	-9%	3%	6%	10%	-11%	4%
Pyrenees Orientales	-17%	10%	1%	1%	4%	-15%	3%
Rhone	3%	11%	9%	-5%	5%	-9%	-9%
Saone (Haute)	-9%	6%	6%	-1%	5%	-18%	7%
Saone et Loire	1%	-3%	1%	-2%	6%	-2%	0%
Sarthe	4%	-12%	-2%	5%	3%	15%	-12%
Savoie	-11%	14%	2%	-9%	16%	3%	-13%
Savoie (Haute)	-8%	7%	-2%	8%	5%	2%	-2%
Seine	-8%	23%	-3%	-4%	-1%	0%	3%
Seine Inferieure	-1%	-2%	4%	-16%	-7%	8%	3%
Seine et Marne	7%	-9%	3%	2%	-1%	-1%	2%
Seine et Oise	-5%	13%	0%	-7%	-7%	0%	4%
Sevres (Deux)	12%	-15%	-4%	1%	3%	13%	-8%
Somme	-5%	-11%	4%	1%	-5%	7%	6%
Tarn	-1%	-2%	3%	-3%	10%	-8%	2%
Tarn et Garonne	8%	-2%	-1%	-2%	10%	-7%	2%
Var	-5%	24%	12%	-1%	-24%	-8%	-6%
Vaucluse	-4%	11%	7%	6%	3%	-20%	-5%
Vendee	9%	-15%	-7%	7%	-4%	11%	-9%
Vienne	17%	-29%	5%	5%	-12%	28%	-13%
Vienne (Haute)	14%	-22%	4%	3%	9%	-6%	-12%
Vosges	-7%	-7%	0%	1%	13%	-13%	2%
Yonne	16%	-17%	-1%	-1%	7%	-3%	2%
Territoire de Belfort	-7%	-4%	0%	5%	3%	1%	0%